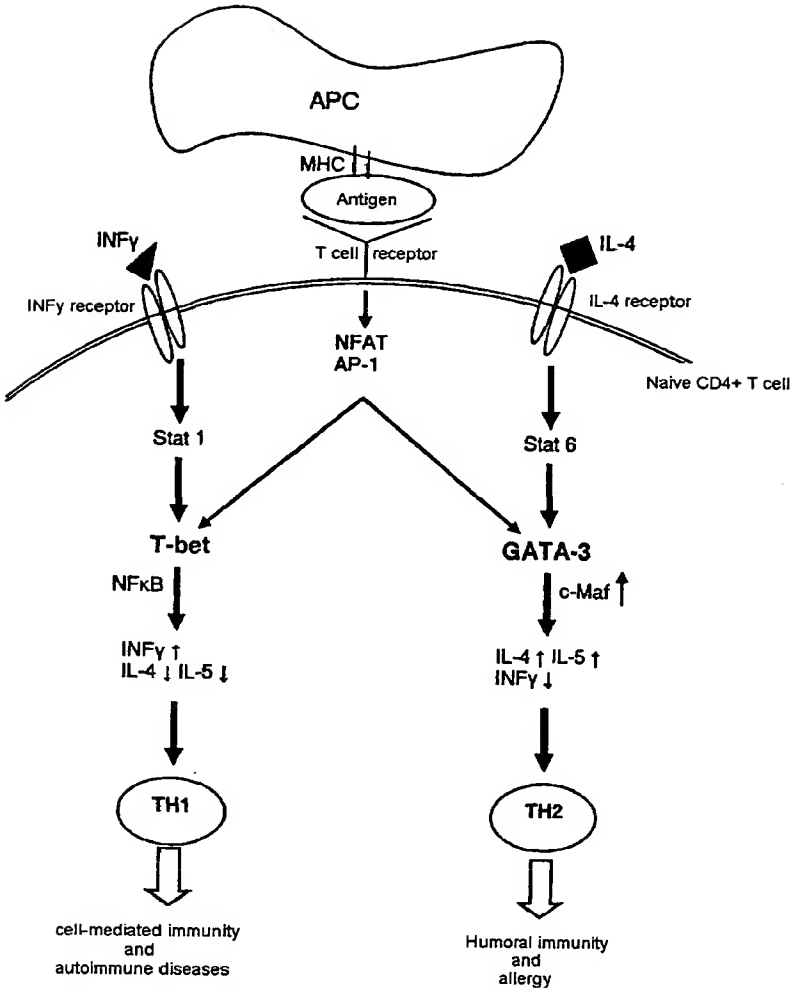
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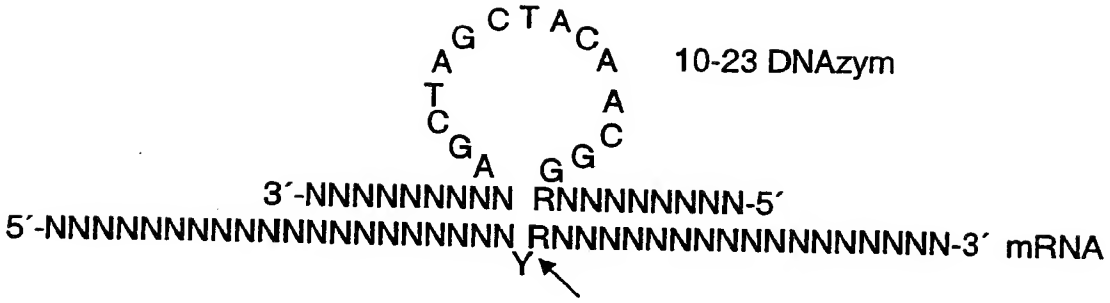
T cell receptor
INFγ
IL-4
INFγ receptor
IL-4 receptor
NFAT
AP-1
Naive CD4+ T cell
Stat 1
Stat 6
T-bet
GATA-3
NFκB
c-Maf
INFγ ↑
IL-4 ↓ IL-5 ↓
IL-4 ↑ IL-5 ↑
INFγ ↓
TH1
TH2
cell-mediated immunity
and
autoimmune diseases
Humoral immunity
and
allergy

Fig. 1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A A
T A
C G C
A G G
10-23 DNAzym
3´-NNNNNNNNN RNNNNNNNNN-5´
5´-NNNNNNNNNNNNNNNNNNNN RNNNNNNNNNNNNNNNNN-3´ mRNA
Y

Fig. 2

Fig. 3

Name	DNAzyme Sequenz
hgd1	5'-TCGGTCAGAggctagctacaacgaTGCGTTGCT-3'
hgd2	5'-GGCGTACGAggctagctacaacgaCTGCTCGGT-3'
hgd3	5'-GGCGGCGTAggctagctacaacgaGACCTGCTC-3'
hgd4	5'-CTCGGGTCAggctagctacaacgaCTGGGTAGC-3'
hgd5	5'-TCCTCTGCAggctagctacaacgaCGGGGTCCT-3'
hgd6	5'-ACTCTGCAAggctagctacaacgaTCTGCGAGC-3'
hgd7	5'-GGGCGACGAggctagctacaacgaTCTGCAATT-3'
hgd8	5'-AAGGGGCGAggctagctacaacgaGACTCTGCA-3'
hgd9	5'-AAAACGGGAggctagctacaacgaCAGGTTGTA-3'
hgd10	5'-AGAATAAAAggctagctacaacgaGGGACCAGG-3'
hgd11	5'-ATGGCAGAAggctagctacaacgaAAAACGGGA-3'
hgd12	5'-AACTGGGTAggctagctacaacgaGGCAGAATA-3'
hgd13	5'-ATCCAAAAAggctagctacaacgaTGGGTATGG-3'
hgd14	5'-AGGGGAAGAggctagctacaacgaAAAAATCCA-3'
hgd15	5'-TTTTAAAAAggctagctacaacgaTATCTTGGA-3'
hgd16	5'-GTGGGGGGAggctagctacaacgaGGGAAGGCT-3'
hgd17	5'-GTTGAATGAggctagctacaacgaTTGCTTTCG-3'
hgd18	5'-GTCGTTGAAggctagctacaacgaGATTTGCTT-3'
hgd19	5'-GGCCCGGAAggctagctacaacgaCCGCGCGCG-3'
hgd20	5'-TCACCTCCAggctagctacaacgaGGCCTCGGC-3'
hgd21	5'-CCGCCGTCAggctagctacaacgaCTCCATGGC-3'
hgd22	5'-GGTGGCTCAggctagctacaacgaCCAGCGCGG-3'
hgd23	5'-CGTTGAGCAggctagctacaacgaGGCGGGGTG-3'
hgd24	5'-CCGCGTCCAggctagctacaacgaGTAGGAGTG-3'
hgd25	5'-CAGCGGGTAggctagctacaacgaTGCGCCGCG-3'
hgd26	5'-GCACATCCAggctagctacaacgaCTCCTCCGG-3'
hgd27	5'-AAAAGCACAggctagctacaacgaCCACCTCCT-3'
hgd28	5'-TAAAAAGCAggctagctacaacgaATCCACCTC-3'
hgd29	5'-GACCGTCGAggctagctacaacgaGTTAAAAAG-3'
hgd30	5'-TTGCCTTGAggctagctacaacgaCGTCGATGT-3'
hgd31	5'-AGGGCGGGAggctagctacaacgaGTGGTTGCC-3'
hgd32	5'-TGGCCCTGAggctagctacaacgaCGAGTTTCC-3'
hgd33	5'-ACCTCTGCAggctagctacaacgaCGTGGCCCT-3'
hgd34	5'-CGGAGGGTAggctagctacaacgaCTCTGCACC-3'
hgd35	5'-GGCGGCACAggctagctacaacgaCTGGCTCCC-3'
hgd36	5'-CGGGCGGCAggctagctacaacgaACCTGGCTC-3'
hgd37	5'-AGGGATCCAggctagctacaacgaGAAGCAGAG-3'
hgd38	5'-GGGTAGGGAggctagctacaacgaCCATGAAGC-3'
hgd39	5'-GGGCTGAGAggctagctacaacgaTCCAGGGGG-3'
hgd40	5'-GTGGATGGAggctagctacaacgaGTCTTGGAG-3'
hgd41	5'-CGTGGTGGAggctagctacaacgaGGACGTCTT-3'
hgd42	5'-GGGGGTAGAggctagctacaacgaGGAGAGGGG-3'
hgd43	5'-GGAGGAGGAggctagctacaacgaGAGGCCGGG-3'
hgd44	5'-GCCCCCCGAggctagctacaacgaAAGGAGGAG-3'
hgd45	5'-CCGGGGAGAggctagctacaacgaGTCCTTCGG-3'
hgd46	5'-GGACAGCGAggctagctacaacgaGGGTCCGGG-3'
hgd47	5'-TGGGGTGGAggctagctacaacgaAGCGATGGG-3'
hgd48	5'-CTTGAGGCAggctagctacaacgaTCTTTCTCG-3'
hgd49	5'-CACCTGGTAggctagctacaacgaTTGAGGCAC-3'

Fig. 3 Cont.

Name	DNAzyme Sequenz
hgd50	5'-GCAGGGGCAggctagctacaacgaCTGGTACTT-3'
hgd51	5'-CCAGCTTCAggctagctacaacgaGCTGTCGGG-3'
hgd52	5'-GTGGGACGAggctagctacaacgaTCCAGCTTC-3'
hgd53	5'-GGAGTGGGAggctagctacaacgaGACTCCAGC-3'
hgd54	5'-ATGCTGCCAggctagctacaacgaGGGAGTGGG-3'
hgd55	5'-GGGCGGTCAggctagctacaacgaGCTGCCACG-3'
hgd56	5'-GAGGCTCCAggctagctacaacgaCCAGGGCGG-3'
hgd57	5'-GTGGGTCGAggctagctacaacgaGAGGAGGCT-3'
hgd58	5'-AGGTGGTGAggctagctacaacgaGGGGTGGTG-3'
hgd59	5'-ACTCGGGCAggctagctacaacgaGTAGGGCGG-3'
hgd60	5'-GGAGCTGTAggctagctacaacgaTCGGGCACG-3'
hgd61	5'-GGACTTGCAggctagctacaacgaCCGAAGCCG-3'
hgd62	5'-GGGCCTGGAggctagctacaacgaTTGCATCCG-3'
hgd63	5'-TGTGCTGGAggctagctacaacgaCGGGCCTTG-3'
hgd64	5'-GTTCACACAggctagctacaacgaTCCCTGCCT-3'
hgd65	5'-CAGTTCACAggctagctacaacgaACTCCCTGC-3'
hgd66	5'-CACAGTTCAggctagctacaacgaACACTCCCT-3'
hgd67	5'-GTTGCCCCAggctagctacaacgaAGTTCACAC-3'
hgd68	5'-TCGCCGCCAggctagctacaacgaAGTGGGGTC-3'
hgd69	5'-CCCGTGCCAggctagctacaacgaCTCGCCGCC-3'
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Fig. 4

Multiple Sequence Alignments GATA-3

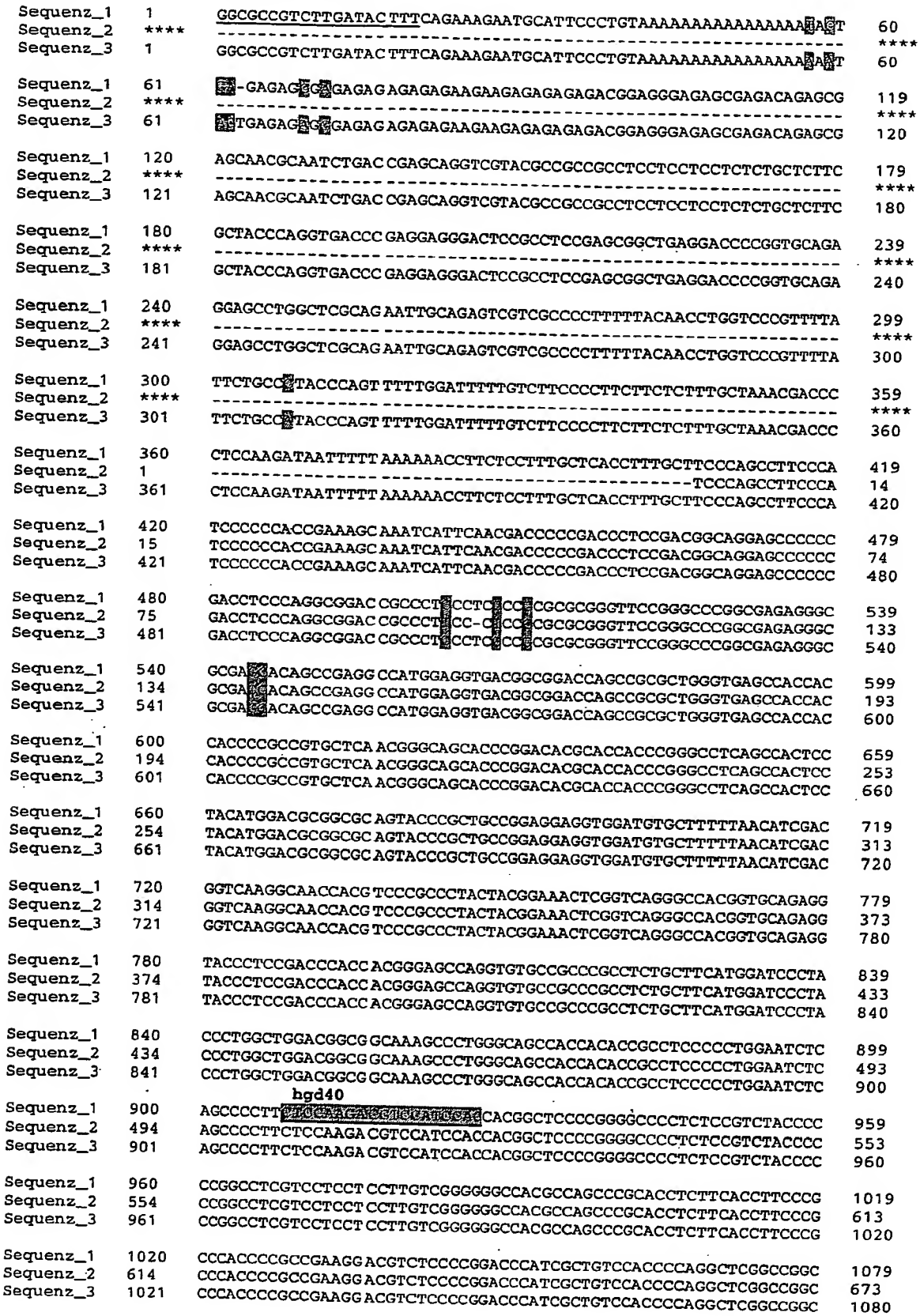

Fig. 4 Cont.

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Sequenz_3  1081  TCGGCCCGGCAGGACG AGAAAGAGTGCCTCAAGTACCAGGTGCCCCTGCCCGACAGCATG  1140

Sequenz_1  1140  AAGCTGGAGTCGTCCC ACTCCCGTGGCAGCATGACCGCCCTGGGTGGAGCCTCCTCGTCG  1199
Sequenz_2  734   AAGCTGGAGTCGTCCC ACTCCCGTGGCAGCATGACCGCCCTGGGTGGAGCCTCCTCGTCG  793
Sequenz_3  1141  AAGCTGGAGTCGTCCC ACTCCCGTGGCAGCATGACCGCCCTGGGTGGAGCCTCCTCGTCG  1200

Sequenz_1  1200  ACCCACCACCCCATCA CCACCTACCCGCCCTACGTGCCCGAGTACAGCTCCGGACTCTTC  1259
Sequenz_2  794   ACCCACCACCCCATCA CCACCTACCCGCCCTACGTGCCCGAGTACAGCTCCGGACTCTTC  853
Sequenz_3  1201  ACCCACCACCCCATCA CCACCTACCCGCCCTACGTGCCCGAGTACAGCTCCGGACTCTTC  1260

Sequenz_1  1260  CCCCCCAGCAGCCTGC TGGGCGGCTCCCCCACCGGCTTCGGATGCAAGTCCAGGCCCAAG  1319
Sequenz_2  854   CCCCCCAGCAGCCTGC TGGGCGGCTCCCCCACCGGCTTCGGATGCAAGTCCAGGCCCAAG  913
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Sequenz_2  914   GCCCGGTCCAGCACAG ---GCAGGGAGTGTGTGAACTGTGGGGCAACCTCGACCCCACTG  970
Sequenz_3  1321  GCCCGGTCCAGCACAG AAGGCAGGGAGTGTGTGAACTGTGGGGCAACCTCGACCCCACTG  1380

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Sequenz_2  971   TGGCGGCGAGATGGCA CGGGACACTACCTGTGCAACGCCTGCGGGCTCTATCACAAAATG  1030
Sequenz_3  1381  TGGCGGCGAGATGGCA CGGGACACTACCTGTGCAACGCCTGCGGGCTCTATCACAAAATG  1440

Sequenz_1  1440  AACGGACAGAACCGGC CCCTCATTAAGCCCAAGCGAAGGCTGTCTGCAGCCAGGAGAGCA  1499
Sequenz_2  1031  AACGGACAGAACCGGC CCCTCATTAAGCCCAAGCGAAGGCTGTCTGCAGCCAGGAGAGCA  1090
Sequenz_3  1441  AACGGACAGAACCGGC CCCTCATTAAGCCCAAGCGAAGGCTGTCTGCAGCCAGGAGAGCA  1500

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Sequenz_2  1091  GGGACGTCCTGTGCGA ACTGTCAGACCACCACAACCACACTCTGGAGGAGGAATGCCAAT  1150
Sequenz_3  1501  GGGACGTCCTGTGCGA ACTGTCAGACCACCACAACCACACTCTGGAGGAGGAATGCCAAT  1560

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Sequenz_3  1561  GGGGACCCTGTCTGCA ATGCCTGTGGGCTCTACTACAAGCTTCACAATATTAACAGACCC  1620

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Sequenz_3  1621  CTGACTATGAAGAAGG AAGGCATCCAGACCAGAAACCGAAAAATGTCTAGCAAATCCAAA  1680

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Sequenz_3  1681  AAGTGCAAAAAAGTGC ATGACTCACTGGAGGACTTCCCCAAGAACAGCTCGTTTAACCCG  1740

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Sequenz_2  1331  GCCGCCCTCTCCAGAC ACATGTCCTCCCTGAGCCACATCTCGCCCTTCAGCCAC[C]CCAGC  1390
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Sequenz_2  1391  CACATGCTGACCACGC CCACGCCGATGCACCCGCCATCCAGCCTGTCCTTTGGACCACAC  1450
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Sequenz_2  1451  CACCCCTCCAGCATGG TCACCGCCATGGGTTAGAGCCCTGCTCGATGCTCACAGGGCCCC  1510
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Sequenz_1  1920  CAGCGAGAGTCCCTGC AGTCCCTTTCGACTTGCATTTTTGCAGGAGCAGTATCATGAAGC  1979
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Sequenz_3  1921  CAGCGAGAGTCCCTGC AGTCCCTTTCGACTTGCATTTTTGCAGGAGCAGTATCATGAAGC  1980

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Sequenz_3  1981  CTAAACGCGATGGATA TATGTTTTTGAAGGCAGAAAGCAAAATTATG[T]TTGCCACTTTGC  2040

Sequenz_1  2040  AAAGGAGCTCACTGTG GTGTCTGTGTTCCAACCACTGAATCTGGACCCCATCTGTGAATA  2099
Sequenz_2  1631  AAAGGAGCTCACTGTG GTGTCTGTGTTCCAACCACTGAATCTGGACCCCATCTGTGAATA  1690
Sequenz_3  2041  AAAGGAGCTCACTGTG GTGTCTGTGTTCCAACCACTGAATCTGGACCCCATCTGTGAATA  2100
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Fig. 4 Cont.

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Sequenz_1  2100  AGCCATTCTGACTCAT ATCCCCTATTTAACAGGGTCTCTAGTGCTGTGAAAAAAAAAA-T  2158
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Sequenz_3  2101  AGCCATTCTGACTCAT ATCCCCTATTTAACAGGGTCTCTAGTGCTGTGAAAAAAAAAAAT  2160

Sequenz_1  2159  CTGAACATTGCATAT AACTTATATTGTAAGAAATACTGTACAATGACTTTATTGCATCT  2218
Sequenz_2  1751  CTGAACATTGCATAT AACTTATATTGTAAGAAATACTGTACAATGACTTTATTGCATCT  1810
Sequenz_3  2161  CTGAACATTGCATAT AACTTATATTGTAAGAAATACTGTACAATGACTTTATTGCATCT  2220

Sequenz_1  2219  GGGTAGCTGTAAGGCA TGAAGGATGCCAAGAAGTTTAAGGAATATGGGAGAAATAGTGTG  2278
Sequenz_2  1811  GGGTAGCTGTAAGGCA TGAAGGATGCCAAGAAGTTTAAGGAATATGGGAGAAATAGTGTG  1870
Sequenz_3  2221  GGGTAGCTGTAAGGCA TGAAGGATGCCAAGAAGTTTAAGGAATATGGGAGAAATAGTGTG  2280

Sequenz_1  2279  GAAATTAAGAAGAAAC TAGGTCTGATATTCAAATGGACAAACTGCCAGTTTTGTTTCCTT  2338
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Sequenz_3  2281  GAAATTAAGAAGAAAC TAGGTCTGATATTCAAATGGACAAACTGCCAGTTTTGTTTCCTT  2340

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Sequenz_2  1931  TCACTGGCCACAGTTG TTTGATGCATTAAAAGAAAATAAAAAAAAGAAAAAAGAGAAAAG  1990
Sequenz_3  2341  TCACTGGCCACAGTTG TTTGATGCATTAAAAGAAAATAAAAAAAAGAAAAA-GAGAAAAG  2399

Sequenz_1  2399  A-------------------------------------------------------------  2399
Sequenz_2  1991  AAAAAAAAAGAAAAAA GTTGTAGGCGAATCATTTGTTCAAAGCTGTTGGCCCTCTGCAAA  2050
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Sequenz_3  2519  AGAGCCTTTTTCTAGG CCTACATGCTTTGTGAACAAGTCCCTGTAATTGTTGTTTGTATG  2578

Sequenz_1  ****  -------------------------------------------------------------  ****
Sequenz_2  2171  TATAATTCAAAGCACC AAAATAAGAAAAGATGTAGATTTATTTCATCATATTATACAGAC  2230
Sequenz_3  2579  TATAATTCAAAGCACC AAAATAAGAAAAGATGTAGATTTATTTCATCATATTATACAGAC  2638

Sequenz_1  ****  -------------------------------------------------------------  ****
Sequenz_2  2231  CGAACTGTTGTATAAA TTTATTTACTGCTAGTCTTAAGAACTGCTTTCTTTCGTTTGTTT  2290
Sequenz_3  2639  CGAACTGTTGTATAAA TTTATTTACTGCTAGTCTTAAGAACTGCTTTCTTTCGTTTGTTT  2698

Sequenz_1  ****  -------------------------------------------------------------  ****
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Sequenz_3  2699  GTTTCAATATTTTCCT TCTCTCTCAATTTTCGG-------------------------  2731

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Sequenz_2  2351  GCAAAAAAAAAAAAA                                               ****
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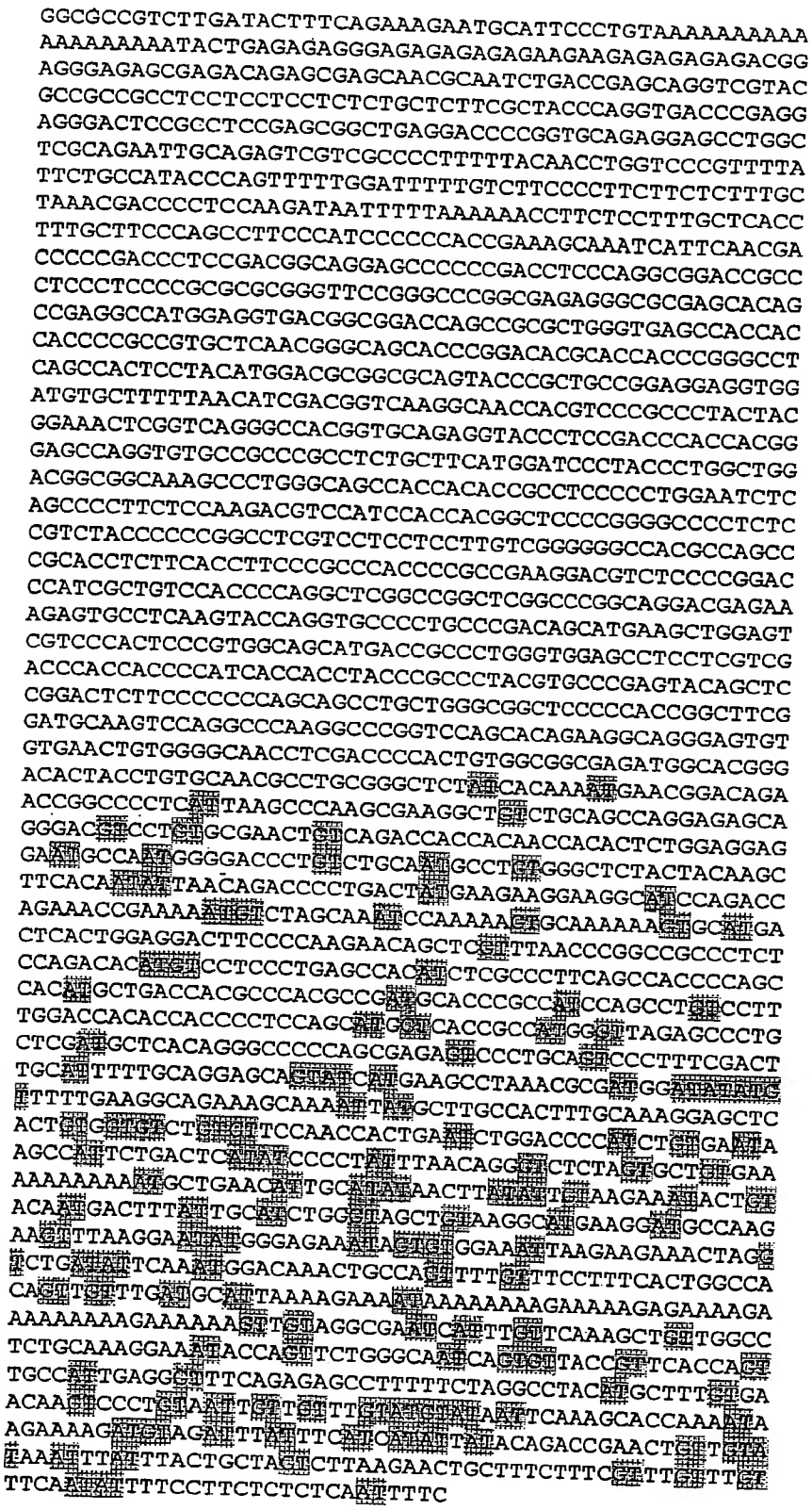

Fig. 4 A

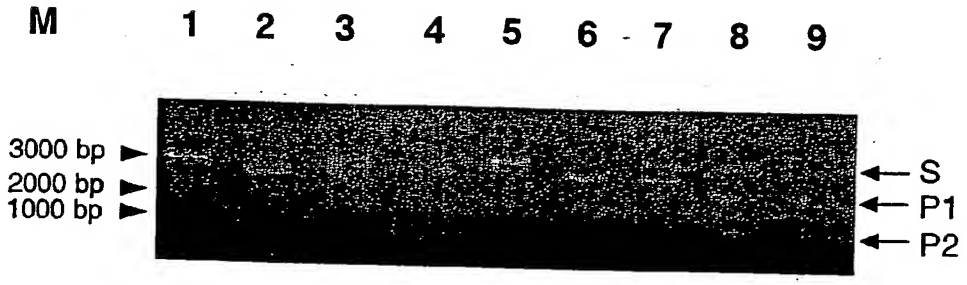

Fig. 5

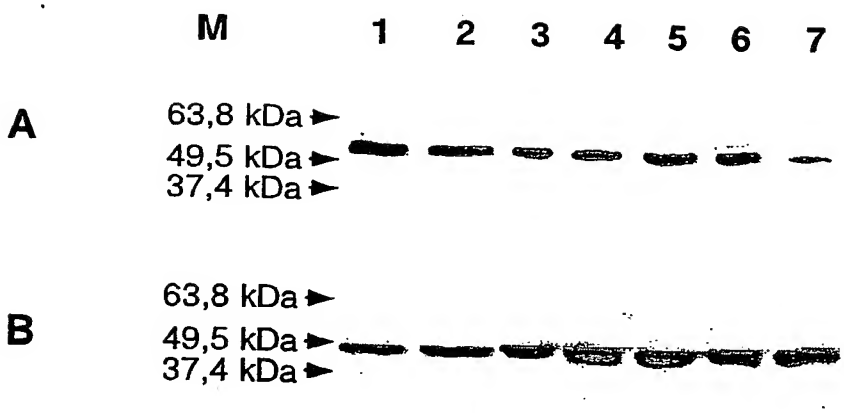

Fig. 6

Fig. 7

Name	DNAzyme Sequenz
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td2	GGGCTCTGAggctagctacaacgaGCCTGGCTT
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td4	GGTGGGGGAggctagctacaacgaCCCACCGGA
td5	GGCGGGGGAggctagctacaacgaCCGAGGGCC
td6	GGGCTGGGAggctagctacaacgaGGGCAGGGA
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td8	GGGCTGGCAggctagctacaacgaCTTCCCGTA
td9	CGATGCCCAggctagctacaacgaCCGGGGCGG
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td11	CCGGCTCCAggctagctacaacgaGATGCCCAT
td12	TCTCCGCAAggctagctacaacgaCCGGCTCCA
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td19	TAGTCCTCAggctagctacaacgaGCGGCCCCG
td20	TCCCCGACAggctagctacaacgaCTCCAGTCC
td21	TTTCCCCGAggctagctacaacgaACCTCCAGT
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td23	GGACCACAAggctagctacaacgaAGGTGGTTG
td24	CTTGGACCAggctagctacaacgaAACAGGTGG
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td26	CTGATTAAAggctagctacaacgaTTGGACCAC
td27	TGGTGCTGAggctagctacaacgaTAAACTTGG
td28	TGATGATCAggctagctacaacgaCTCTGTCTG
td29	TGGTGATGAggctagctacaacgaCATCTCTGT
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td34	AGTAAATGAggctagctacaacgaAGGAATGGG
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td41	CCACCAAGAggctagctacaacgaCACGTCCAC
td42	GCTGGTCCAggctagctacaacgaCAAGACCAC
td43	GCTCTGGTAggctagctacaacgaCGCCAGTGG
td44	CTGCACCCAggctagctacaacgaTTGCCGCTC
td45	CACACTGCAggctagctacaacgaCCACTTGCC
td46	CTTTCCACAggctagctacaacgaTGCACCCAC
td47	GCCTTTCCAggctagctacaacgaACTGCACCC
td48	TTCCTGGCAggctagctacaacgaGCTGCCCTC

Fig. 7 Cont.

Name	DNAzyme Sequenz
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TD51	CCTGGCGCAggctagctacaacgaCCAGTGCGC
TD52	CAAATGAAAggctagctacaacgaTTCCTGGCG
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TD54	ATTGTTGGAggctagctacaacgaGCCCCCTTG
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TD57	GCACAATCAggctagctacaacgaCTGGGTCAC
TD58	GGAGCACAAggctagctacaacgaCATCTGGGT
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TD60	ATGGAGGGAggctagctacaacgaTGGAGCACA
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TD74	TATTATCAAggctagctacaacgaTTTCAGCTG
TD75	GGGTTATTAggctagctacaacgaCAATTTTCA
TD76	AAGGGGTTAggctagctacaacgaTATCAATTT
TD77	CTCCCGGAAggctagctacaacgaCCTTTGGCA
TD78	GTACATGGAggctagctacaacgaTCAAAGTTC

Fig. 8

Multiple Sequenz Alignments T-bet

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Seq_1   61    CCAGGCGTCAGAGCCCGGGCTCCGGTGGGGTCCCCCACCCGGCCCTCGGGTCCCCCGCCC   120
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Seq_1   121   CCTGCTCCCTGCCGATCCCAGCCCACGCGACCCTCTCGCGCGCGGAGGGGCGGGTCCTCG   180
Seq_2   121   CCTGCTCCCTGCCGATCCCAGCCCACGCGACCCTCTCGCGCGCGGAGGGGCGGGTCCTCG   180

Seq_1   181   ACGGCTACGGGAAGGTGCCAGCCCGCCCCGGATGGGCATCGTGGAGCCGGGTTGCGGAGA   240
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Fig. 8 Cont.

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Seq_2   ****  ---------                                                     2589
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Fig. 8A

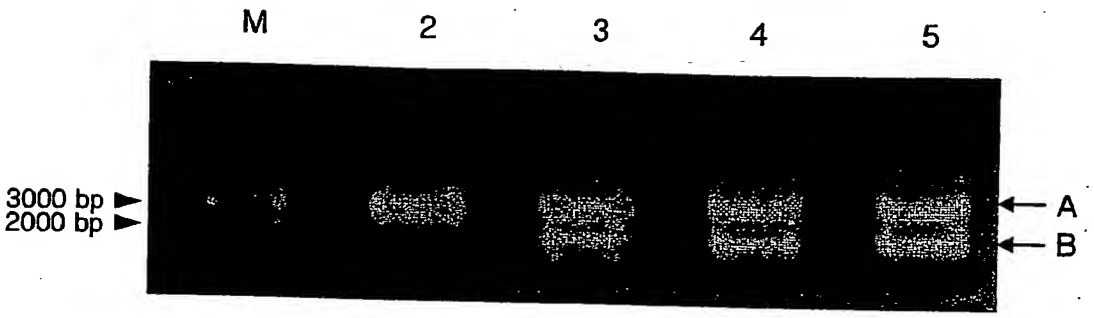
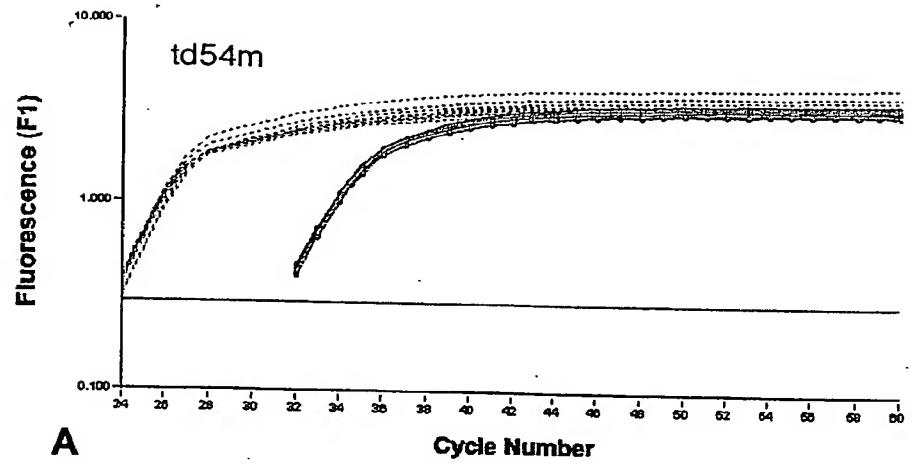


Fig. 9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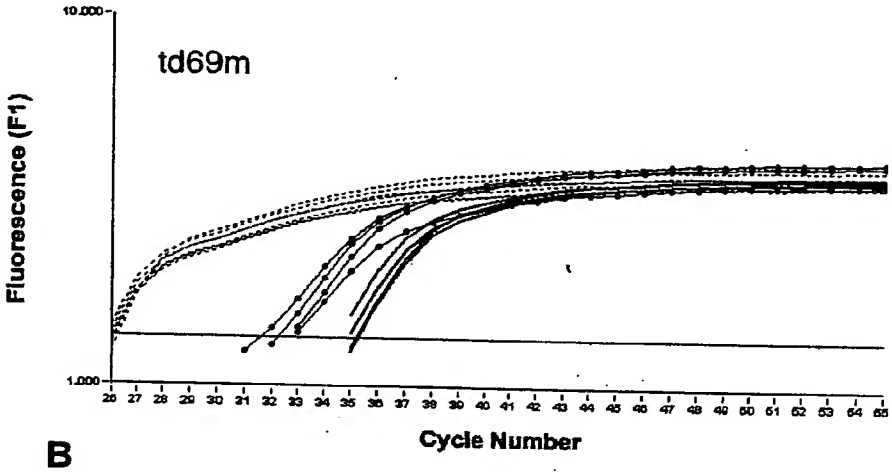
Cycle Number

A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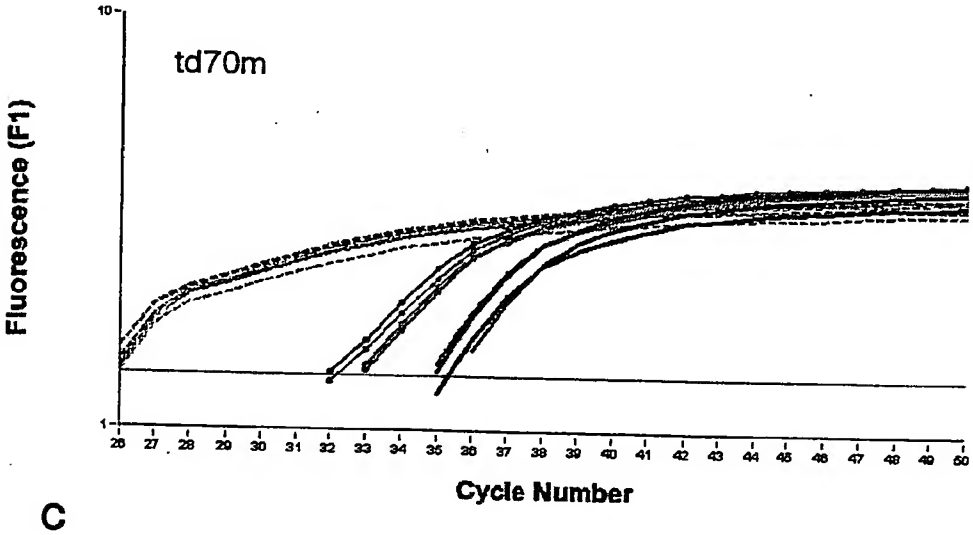
B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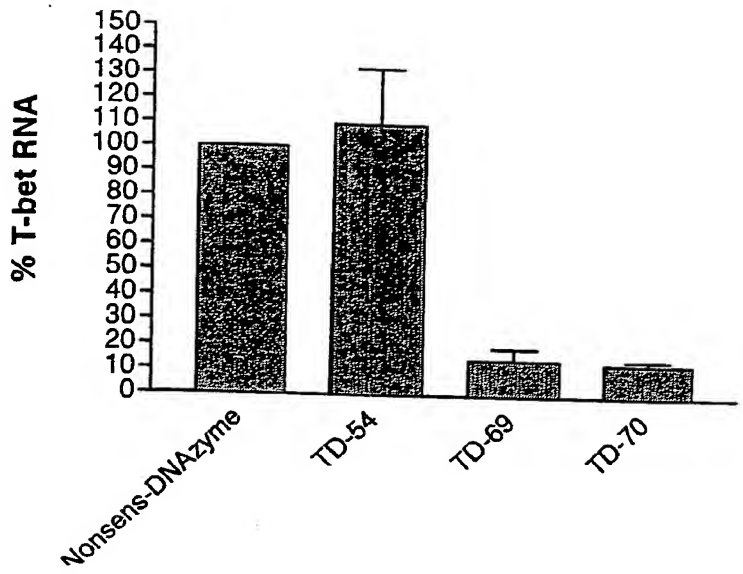
Cycle Number

C

Fig. 10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140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Nonsens-DNAzyme
TD-54
TD-69
TD-70

Fig. 11